



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,677	01/28/2000	Kaoru Sato	43890-401	2531
20277	7590	08/12/2004	EXAMINER	
MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096			LEO, LEONARD R	
			ART UNIT	PAPER NUMBER
			3753	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/493,677	Applicant(s) SATO ET AL.	
	Examiner Leonard R. Leo	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-9,15,17,19-21,23 and 25-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-9,15,17,19-21,23 and 25-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>November 28, 2003</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The amendment filed November 26, 2003 has been entered. Claims 1, 4-9, 15, 17, 19-21, 23 and 25-35 are pending.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 34-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 34-35 are indefinite, in that, the claims from which they ultimately depend recite "a plurality of pillar-type protrusions ... at a predetermined oblique angle against the heat receiving face." It is not clearly understood how the structure of claims 34-35 can be "parallel to the heat receiving face."

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 29 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Coe (3,220,471), Yu or North et al (Figures 2 and 4-5).

Art Unit: 3753

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-6, 9, 15, 17, 19-21, 25, 27-28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu in view of Hinshaw.

Yu discloses all the claimed limitations except an uninterrupted fluid path in the direction of the column.

Hinshaw discloses a heat sink 10 comprising a plurality of first and second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling (column 2, lines 51-56).

Since Yu and Hinshaw are both from the same field of endeavor and/or analogous art, the purpose disclosed by Hinshaw would have been recognized in the pertinent art of Yu.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Yu second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling as recognized by Hinshaw.

Regarding claims 20-21 and 27, Hinshaw discloses the convective cooling may be from on top of the heat sink.

Claims 1, 5-7, 9, 15, 17, 19, 28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coe (3,220,471) or North et al in view of Hinshaw.

Art Unit: 3753

Coe ('471) or North et al discloses all the claimed limitations except an uninterrupted fluid path in the direction of column.

Hinshaw discloses a heat sink 10 comprising a plurality of first and second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling (column 2, lines 51-56).

Since Coe ('471) or North et al and Hinshaw are both from the same field of endeavor and/or analogous art, the purpose disclosed by Hinshaw would have been recognized in the pertinent art of Coe ('471) or North et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Coe ('471) or North et al second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling as recognized by Hinshaw.

Claims 1, 4-8, 9, 15, 17, 19, 23, 28 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over North et al in view of Hinshaw.

North et al discloses all the claimed limitations except an uninterrupted fluid path in the direction of column.

Hinshaw discloses a heat sink 10 comprising a plurality of first and second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling (column 2, lines 51-56).

Since North et al and Hinshaw are both from the same field of endeavor and/or analogous art, the purpose disclosed by Hinshaw would have been recognized in the pertinent art of North et al.

Art Unit: 3753

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in North et al second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling as recognized by Hinshaw.

Regarding claims 4, 8 and 23, North discloses protrusions and/or recesses in Figure 1B.

Claims 4, 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu in view of Hinshaw as applied to claims 1, 5-6, 9, 15, 17, 19-21, 25, 27-28 and 30-33 above or Coe (3,220,471) in view of Hinshaw as applied to claims 1, 5-7, 9, 15, 17, 19, 28 and 30-33 above, and further in view of Lin

The combined teachings of Yu and Hinshaw, or Coe (3,220,471) and Hinshaw discloses all the claimed limitations except protrusions and/or recesses on the pillar-type protrusions.

Lin discloses a cooling apparatus comprising a blower 30 mounted on heat sink 10 having a plurality of pillar-type protrusions 11 with protrusions and/or recesses for the purpose of increasing the surface area and turbulence to improve heat exchange.

Since Yu or Coe (3,220,471) and Lin are both from the same field of endeavor and/or analogous art, the purpose disclosed by Lin would have been recognized in the pertinent art of Yu or Coe (3,220,471).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Yu or Coe (3,220,471) pillar-type protrusions with protrusions and/or recesses for the purpose of increasing the surface area and turbulence to improve heat exchange as recognized by Lin.

***Response to Arguments***

The rejection in view of Coe (3,149,666) is withdrawn.

The double patenting rejection is withdrawn.

Applicants' arguments have been fully considered but they are not persuasive.

The device of Coe (3,220,471), Yu or North et al discloses each and every claim limitation. The claims do not positively recite a heat sink in combination with a heat generating device, nor definite relationships between the claimed structures.

There appears to be no argument that the secondary reference of Hinshaw does not teach employing second slits forming a plurality of pillar-type protrusions for the purpose of increasing the surface area to improve heat exchange and permitting omni-directional convective cooling.

Again, applicants are reminded of their duty to disclose under 37 CFR § 1.56, which states in part:

**Duty to disclose information material to patentability.**

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned.

Art Unit: 3753

The Examiner acknowledges the Information Disclosure Statement filed on November 28, 2003.

The Examiner further requests any and all pertinent information from applicants, assignee and/or representatives with respect to any copending application. Applicants must acknowledge this request to avoid a Notice of Non-Responsive amendment.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648. Status of the application may also be obtained from the Internet: <http://pair.uspto.gov/cgi-bin/final/home.pl>



Art Unit: 3753

Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.

A handwritten signature in cursive script, appearing to read "Leonard R. Leo".

LEONARD R. LEO  
PRIMARY EXAMINER  
ART UNIT 3753

August 9, 2004